

# **M208**

## **User manual**

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# Chapter1.Introduction

## Introduction

M208 is a kind of multiplexer with DVB standard transport stream, it has function of real-time video stream multiplex and re-multiplex, The M208 can packed 8 input ASI SPTS or MPTS to 1 MPTS.

Its multiplexing of the base band signal and additional data is compatible with ISO/IEC-13818 standard and its output interface is the standard DVB ASI interface. it connects with network manage support TCP/IP protocol, the Ethernet adopt RJ45 port.

## Working principle

[principle figure]

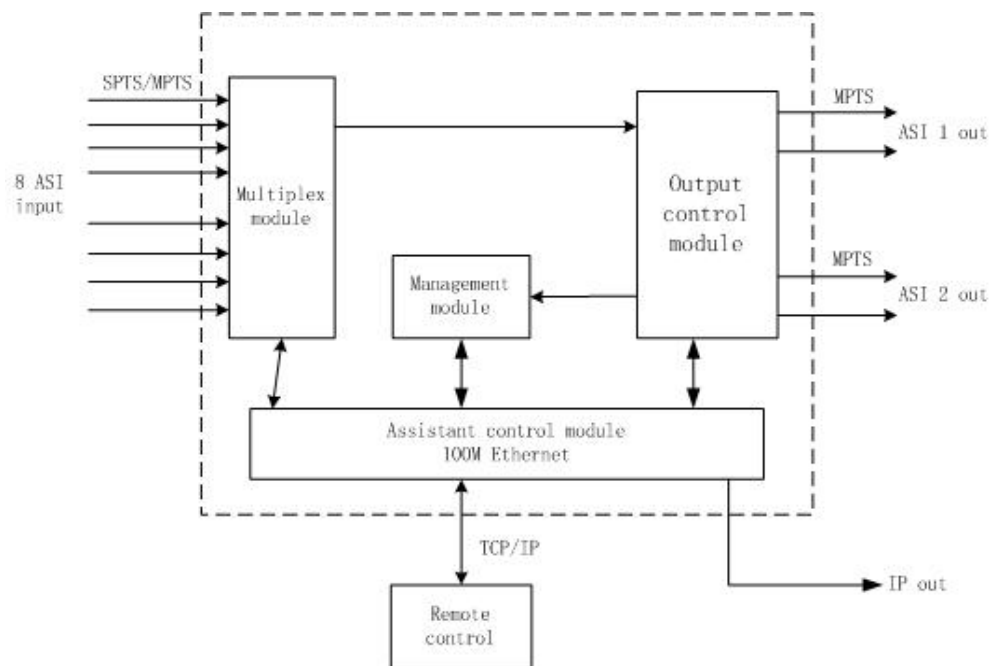


figure1-1

[working principle explain]

The multiplexer accept eight MPEG-2 SPTS or MPTS input and output two MPEG-2 transport stream (MPTS). It filters out the empty packet or unneeded packet, and change the PID (packet identity) .

Obtain the PSI(Program Specific Information) and SI(Service Information)and integrate them with local data.

The M208 connect with network manage soft through TCP/IP protocol.

## function

- Multiplexing to SPTS(single program transport streams) or multiplexing to MPTS(multi program transport streams),MPTS supports all-chosen or part-chosen.
- Support two different output.
- Low time delay. The delay for MPEG-2 Video program is less than 100ms.
- Providing PCR check
- Support DVB data broadcast.
- Support remote upgrade of the software.
- Real time monitor input status

## technique parameter

- PCR: < 100 ns
- Input interface: interface,BNC
- Input interface impedance: 75Ω
- Input interface rate (max): 180Mbps
- Input select PID num (max): 120
- Input program num(max): 100
- Input packet length: 188or 204byte
- Output interface : BNC
- Output interface impedance: 75Ω
- Output packed length: 188 or204byte
- Total output rate (max): 180Mbps
- power supply: 220VAC±10%, 50Hz
- power: 30W

## use surrounding

- working temperature: 0~45℃
- working humidity: 5~80%
- storage temperature: -20~70℃
- storage humidity: 5~90%

## machine parameters

- weight: 4Kg
- dimension: 450X430X44 (deepXwideXhigh) mm

# chapter2.installation

## installation dimension

Each of equipment should keep down 1U (44mm) space, machine dimension of equipment is shown as figure2-1。

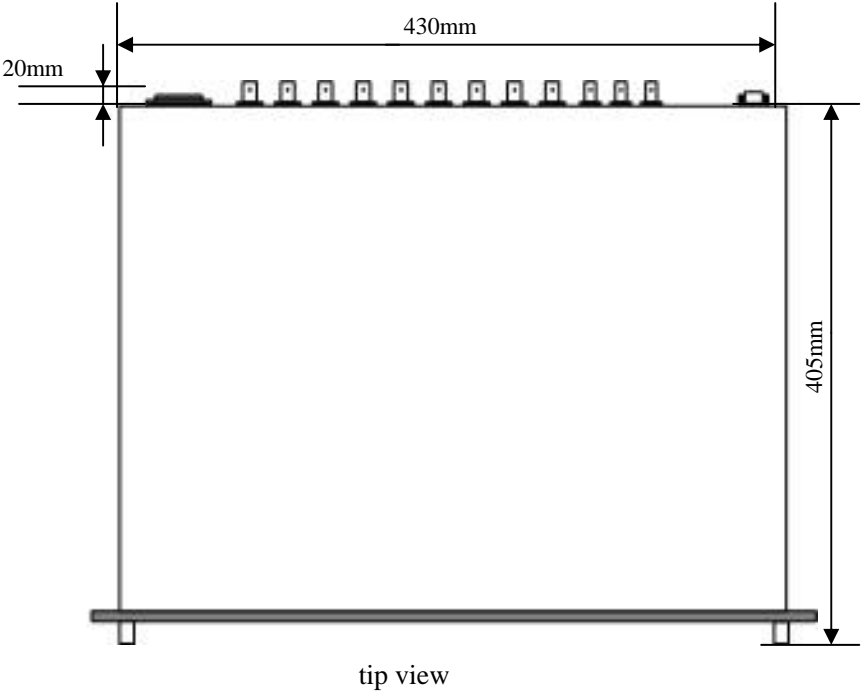
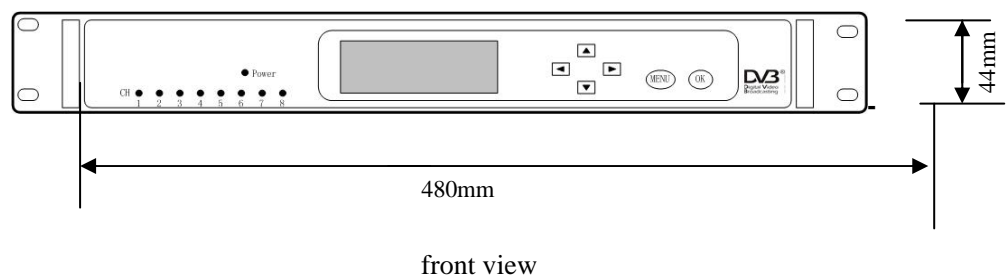


figure 2-1

## port describe

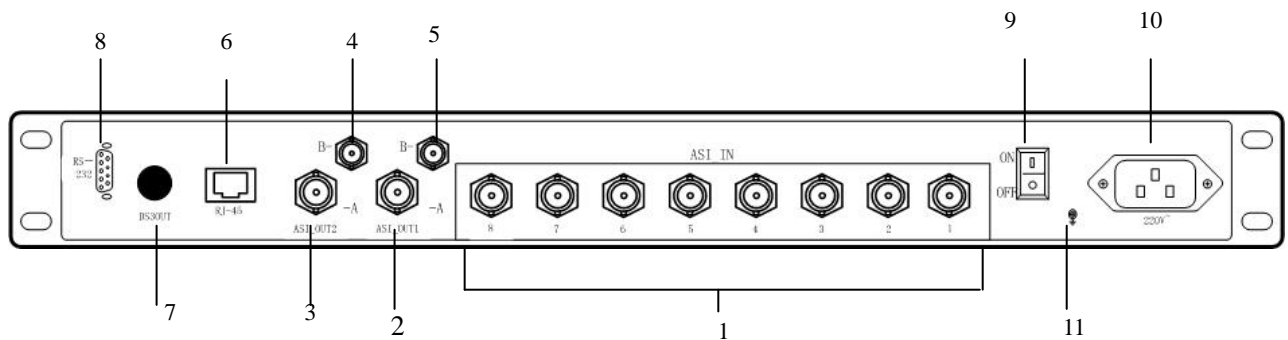


figure2-2

figure2-2 show rear-panel map of equipment, port describe is shown:

number	function
1	ASI input channel (from 1 to 8), input SPTS or MPTS with DVB standard, 75 $\Omega$ BNC.
2	ASI output 1, multiplex output, 75 $\Omega$ BNC.
3	ASI output 2, multiplex output, 75 $\Omega$ BNC.
4	The same as to ASI output 2.
5	The same as to ASI output 1.
6	RJ-45 port, network control. The customer can manage the multiplexer via any PC in the LAN or WAN.
7	DS3 output, 75 $\Omega$ BNC, the interface need to be ordered
8	RS232C port, it is used upgrade and test locally
9	Power switch
10	Power supply
11	GND

**Note:** output 1 is different or same with output 2

# Chapter3.operation



*The multiplexer only operate some simple configure by front panel,advice using network manage sofeware.once use the network manage software,if use the network sofeware, please do not operate front panel.*

## M208 basic operation

The section introduce the M108 operation step, from table3-1, you can know operation step come down to some basic apply.

Table 3-1 M208 basic operation flow:

<b>step appliance</b>	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>	<b>Fifth</b>
Installation	Setting network address	Initialization	Logon	Reading information	Program multiplexing
Chang input port transport treams	Initialization	Logon	Reading information	Program multiplexing	
Change output program parameters	Logon	Reading information	Modify parameters		
Status monitor	Logon	Reading information			

## Setting network address



- *Every equipment has different IP address in the network*
- *You must configure network address by front panel at first*

**Configure network address is shown appendix A—4.**



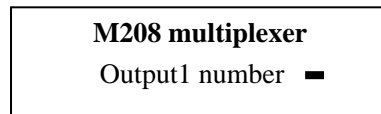
## Initialization



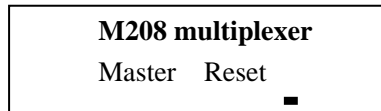
- The initialization of multiplexer maybe lose some parameters and interrupt thansmission
- the initialization of multiplexer is used the first installation or input streams changed or work status is abnormal.

***Initialization step is shown as following:***

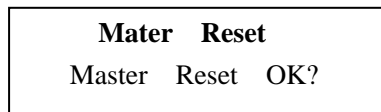
- 1、 Click” MENU”,enter into main menu



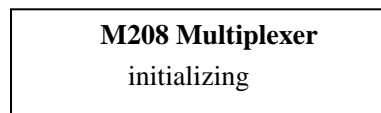
- 2、 Click ↑ ↓ key to move ‘master reset’



- 3、 click’OK’ key to enter the following figure




- 4、 click “OK” key to finish initialization,the interface is shown as following figure



- 5、 at the same time, initialization can be operated by network manage, logon “M208”network manage process,click” 🌟”- ‘configured DVB-SI to output’, then the initialization is finished.

# logon

double click  Mux2.exe Mux2 MFC Applica., open the M208 network management interface, it is shown as figure3-1. (download the M208 network management process can be seen appendix B)

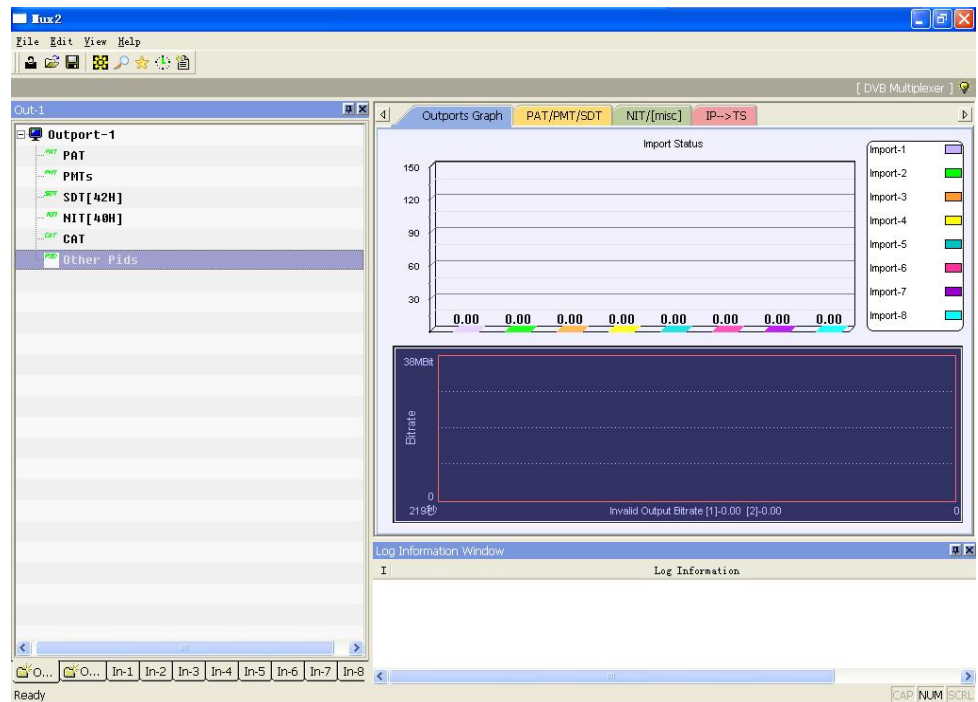











figure 3-1

The toolbar is located on top of the program.



- (1) “” is used to change the password
- (2) “” is used to save the parameters to hard disk as file
- (3) “” is to open the saved parameter files
- (4) “” is used to connect and disconnect with the multiplexer
- (5) “” is used to read DVB-SI information from multiplexer input
- (6) “” is used to save modified parameters
- (7) “” is used to lock the keyboard
- (8) “” is to display multiplexer version number

(9) “” is to display IPTS information

right click '' , it will be displayed as following figure3-2, click the M208 IP address(setting the IP address can be seen on 'setting network address 'chapter) on“device ip” .if search the multiplexer IP address,fill in IP address on“Broadcast IP” ,then click“Search”, if the mux IP address lie in the same network,the“device ip” will display the mux IP address, ‘username’ is dvb and ‘password’ is dvb,then click ‘OK’ .

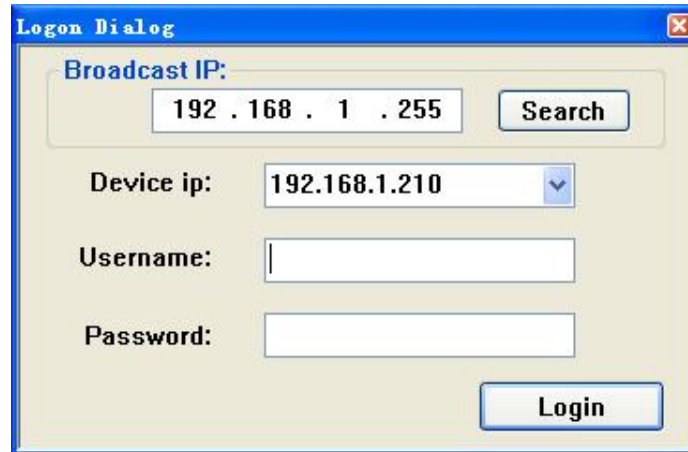


figure 3-2

if logon succeefully,the interface will display as following figure3-3:

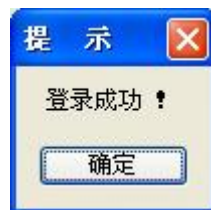



figure 3-3

if click “search”, the “device ip” do not display the IP address, check the mux IP address is same as the “broadcast IP” network address range,or if the network line connect correctly.

## read information

After logon the M208 successfully,click '' , the M208 start to read inport information., at the same time the network interface can not be operated,after finish reading you can operate the M208 other function.

### *[bitstream control]*

click “Outports Graph” in the figure3-1,it will be displayed as following figure3-4.



figure 3-4

Above the figure3-4, there are eight colour histograms, it show eight inport bitrate。Seen the figure3-4, in the blue area, it will display the M208 current valid output bitrate.

**Note:**the output bitrate is not total bitrate,the total bitrate is unchangeable.

### [program parameter information]

Through click figure3-4,it is shown below left side the window.the interface is show as figure3-5.simply analyse output or 8 inport stream.

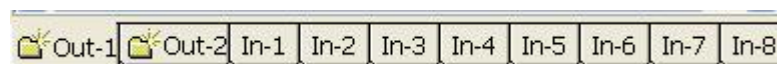


figure 3-5

for example select import1,the interface is following as figure 3-6.the import include PAT、PMT、SDT、NIT、CAT 和 All Pids.

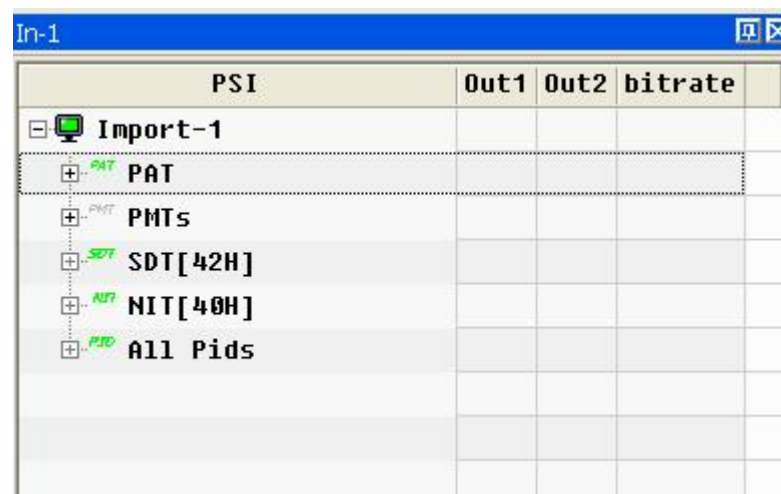


figure 3-6

Click '+' before any item,such as the figure3-7.the PMTs have eight PMT, it show the import-1 have eight program streams and every Pid thansmit bitrate in ALL Pid.

PSI	Out1	Out2	bitrate
Import-1			
PAT			
PMTs			
301: pmtPID=257(101H)			
302: pmtPID=258(102H)			
303: pmtPID=259(103H)			
304: pmtPID=260(104H)			
305: pmtPID=261(105H)			
306: pmtPID=262(106H)			
307: pmtPID=263(107H)			
65534: pmtPID=265(1...			
SDT[42H]			
NIT[40H]			
All Pids			
0(0H) -- PAT			22 K
16(10H) -- NIT			0 K
17(11H) -- SDT/BAT			7 K
20(14H) -- TDT/TOT/ST			0 K
257(101H) -- PMT:301			26 K
258(102H) -- PMT:302			26 K
259(103H) -- PMT:303			22 K
260(104H) -- PMT:304			22 K
261(105H) -- PMT:305			26 K
262(106H) -- PMT:306			22 K

figure3-7 note:

301: pmtPID=257(101H)

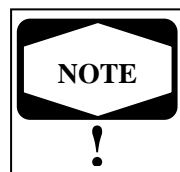
301:Program number

257: algorism PID

101H: Hex PID

figure 3-7

## program multiplex



*Output program number lie on total effective bitrate,no higher than setting total output bitrate,between the effective bitrate and total output bitrate have about 2Mbps space,it use to transfer CA、SI information and so on. only modify yellow area parameters*

After logon the M208 network manage process and read information, multiplex the program streams and configure streams parameter.

## Select port

Left click input port,for example select In-1 port,the interface is shown as figure 3-8.

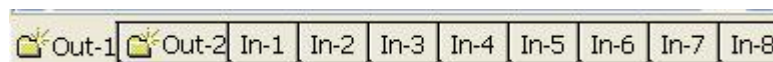


figure3-8

## Program transfer

**note:** subscribe may select input program to output in out1 or out2

under PMTs table,right key click program which need to transfer,left key click,it will be shown as figure3-9,select 'transfer', then right key click to ok.at same time the interface will display'Y'.such as figure3-9,program number 301 output on outport2 and outport1.

Repeat operation,finish to transfer program which need to be tranmited,then click

out-1 or out-2, it will be displayed, such as figure3-11

PSI	Out1	Out2	bitrate
Import-1			
PAT			
PMTs			
301: pmtPID=257(101H)	Y	Y	
302: pmtPID=258(102H)			
303: pmtPID=259(103H)			
304: pmtPID=260(104H)			
305: pmtPID=261(105H)			
306: pmtPID=262(106H)			
307: pmtPID=263(107H)			
65534: pmtPID=265(109H)			
SDT[42H]			
NIT[40H]			
All Pids			
0(0H) -- PAT			22 K
16(10H) -- NIT			0 K
17(11H) -- SDT/BAT			7 K
20(14H) -- TDT/TOT/ST			0 K
257(101H) -- PMT:301			26 K
258(102H) -- PMT:302			26 K
259(103H) -- PMT:303			22 K
260(104H) -- PMT:304			22 K
261(105H) -- PMT:305			26 K
262(106H) -- PMT:306			22 K

figure 3-9

seen from figure3-11, some programs which had been transferred from import will be displayed in the PMTs, click '+' before program number, the program include video stream, audio stream and so on..when click '+' before PMTs in import, it may include some PIDs which have "?" symbol. such as figure A, "?" show the M208 read some unknown PIDs, these PIDs may be deleted, its will not effect output and transmit.

Outport-1
PAT
PMTs
1<-301: pmt=257(101H) import=1
Video [35(23H)<-512(200H)]
Audio [34(22H)<-650(28aH)]
302: pmt=258(102H) import=1
?? Desc[tag=bH]
?? Desc[tag=cH]
?? Desc[tag=eH]
?? Desc[tag=10H]
Video [513(201H)]
?? Desc[tag=2H]
?? Desc[tag=52H]
?? Desc[tag=eH]
?? Desc[tag=6H]

figure A

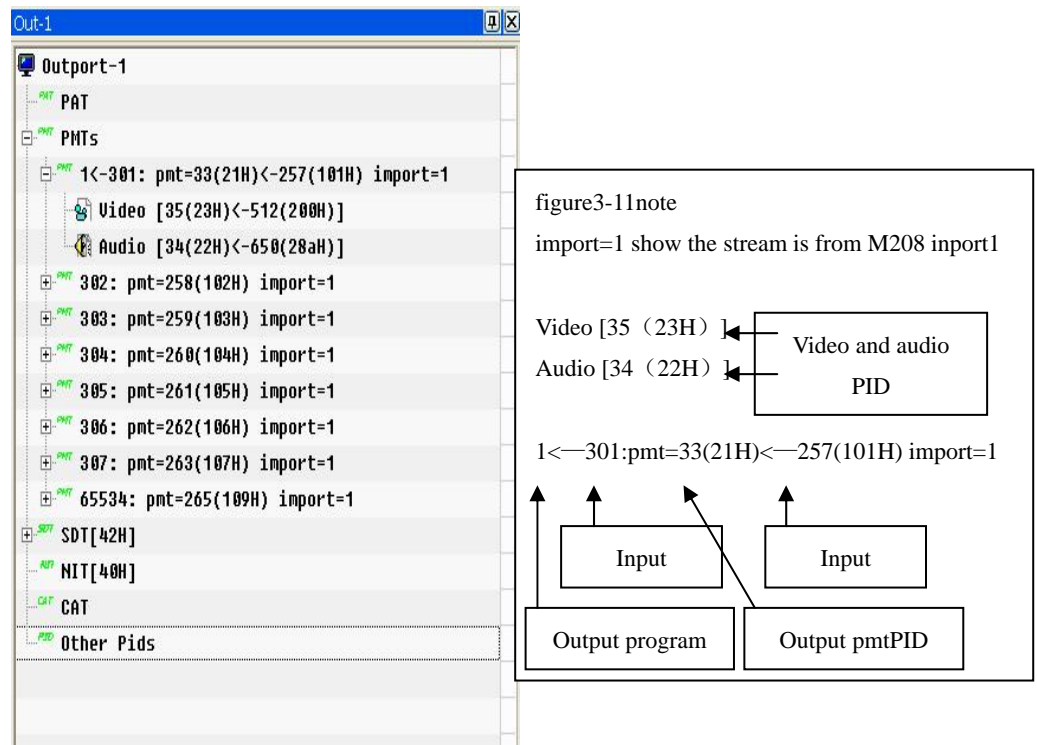


figure 3-11

## setting PMT

left click 'PMT' in one output, such as figure3-12, these parameters can be modified in yellow area. such as PMT\_PID、program\_number、PCR\_PID、elementary\_PID and so on. these parameters value which its lie '<—' left side can be modified. elementary\_PID include Video\_PID and Audio\_PID, when select video stream about figure3-12, the elementary\_PID show video PID, otherwise Audio PID.

PAT		CA Descriptor	
transport_stream_id	0	Service Descriptor	
PMT		Service Type	digital television service
PMT_PID	257(101H) <- 257(101H)	Service Provider	CCTV
program_number	1(1H) <- 301(12dH)	Service Name	CCTV-1
PCR_PID	8190(1ffeH) <- 8190(1ffeH)	Unknown descriptor	
streams			
stream type	ISO/IEC 13818-2 Video		
elementary_PID	35(23H) <- 512(200H)		
SDT			
transport_stream_id	0(0H)		
original_network_id	0(0H)		
SERVICES			
service_id	1(1H)		
EIT_schedule_flag	0		
EIT_present_following	0		
running_status	4: running		
free_CA_mode	0		

figure 3-12

**Note: any pid must be modified differently.**



## Setting SDT

Select SDT left side of figure 3-13 , corresponding right side to set transport\_stream\_id and original\_network\_id. Transport\_stream\_id is be assigned according to 1, 2.....,it show transport stream1, 2.....,original\_network\_id suggest to select'0'.

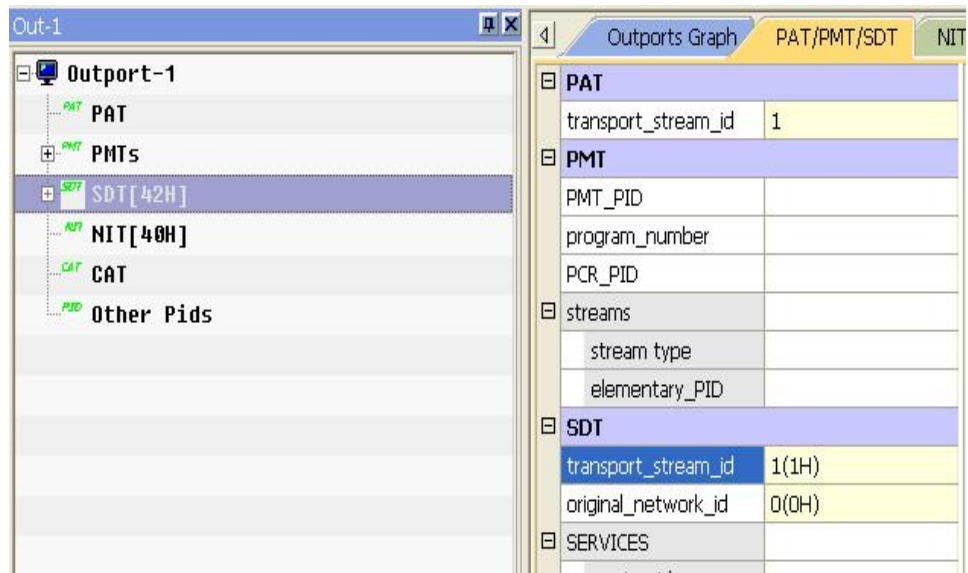


figure 3-13

## Setting NIT

Left click 'NIT',such as figure 3-14,configure network\_id and Output Parameters.network\_id suggest to select '0',the same as original\_network\_id.in same network all of multiplexer is same.

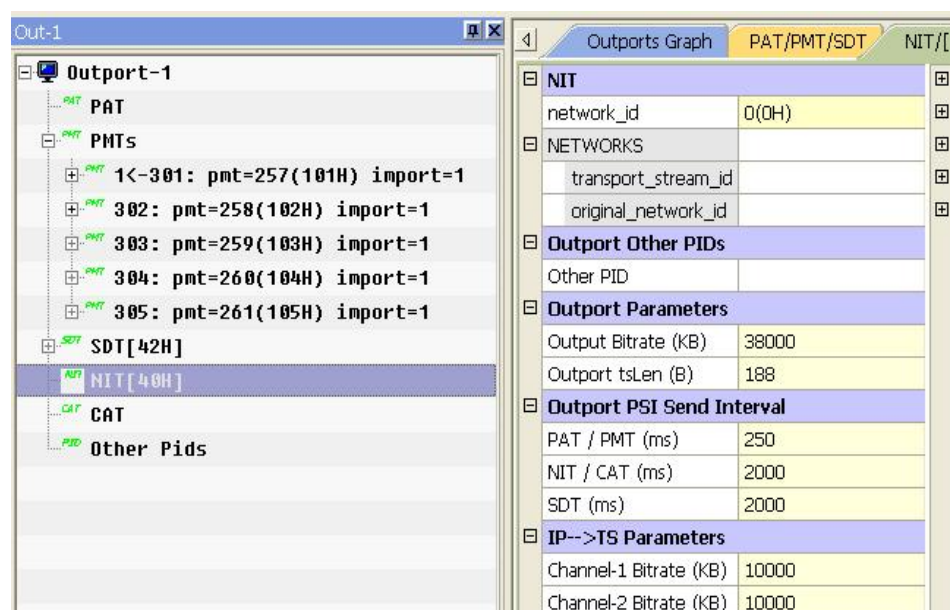


figure 3-14

About Output PSI Send Interval,suggest to select default value,the value is set by DVB standard.



**Note:the original\_network\_id in SDT is the same as network\_id in NIT,suggest to select"0" , the network\_id of these multiplexer which lie in the same network are same.**

Make sure the parameter configure, click'🌟' 'write configure information', save the parameters to the M108, even though the M108 is cut power supply, the parameter can not be lost.

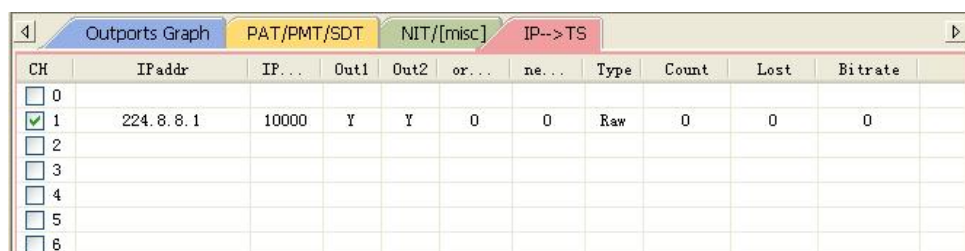
## M208 applications operation

### Support IP↔TS

M208 support IP↔TS,apply STB software upgrade or more use

***note: don't setting these parameters usually***

logon M208 network management then read information , select 'IP↔TS'key,such as figure3-26.



CH	IPAddr	IP...	Out1	Out2	or...	ne...	Type	Count	Lost	Bitrate
<input type="checkbox"/> 0										
<input checked="" type="checkbox"/> 1	224.8.8.1	10000	Y	Y	0	0	Raw	0	0	0
<input type="checkbox"/> 2										
<input type="checkbox"/> 3										
<input type="checkbox"/> 4										
<input type="checkbox"/> 5										
<input type="checkbox"/> 6										

figure3-26

Select a channel 1,then click in blank way,at same time,some parameters will be displayed,such as IP address、 IP port and so on

About IP address、 IP port suggest to select default parameter

When input stream with IP data packeted,if input data send by multi-broadcast,Ipaddr,Ipport use input data multi-broadcast parameter.otherwise its value use the M208 parameter.

Type、 orgPID、 newPID suggest to select '0'

Make sure the parameter configure,click'★' 'write configure information' ,save the parameters to M208.

# Transfer service information

The M108 can edit and send NIT、SDT of service information (SI), or it may send other service information.

- 1、 select a port which input service information (SI), such as figure 3-28,select In-1

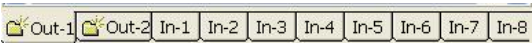


figure 3-28

- 2、 if import is green,it show the port is opened;if the is grey,it show the import need to be opened. right key In-1,select'open port',such as figure3-29

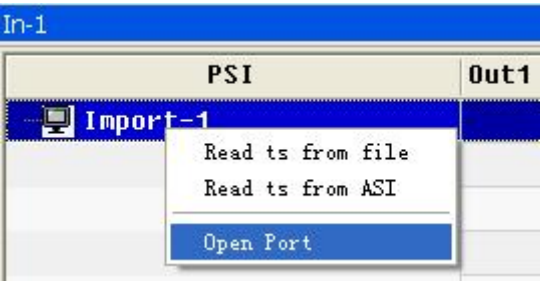


figure 3-29

- 3、 after opening port,right click import,select 'Read ts from ASI' .such 3-30.

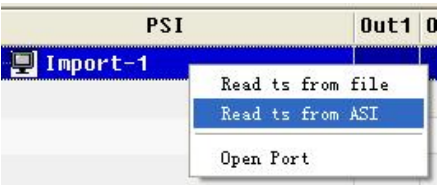


figure 3-30

- 4、 after reading SI information from M208 import,such as3-31, NIT、 SDT/BAT、 EIT、 TDT/TOT/ST have been displayed in 'All pids' .right click one table which need to transfer,then select 'Transfer' .

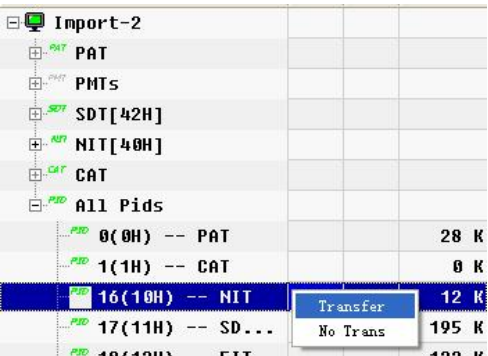


figure 3-31

5、 after reading import information,enter outport,such as figure3-32.

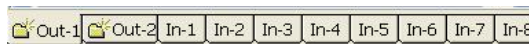


figure 3-32

6、 click ‘other pids’, some of SI have been displayed in outport.

7、 right click‘SDT’,such as figure 3-33,then left click ‘√Send SDT’, it show SDT will be send by M208.otherwise select‘Send SDT’



figure 3-33

**[note]**

**EN300 468 standard define all of PID table in SI, so in a same channel there are different SI.when transfer outer SI,close to send SDT and NIT which send by M208.**

8、 right click‘NIT’,such as figure3-34,select ‘√Send NIT’, it show NIT table will be send by M208.otherwise select ‘Send NIT’ .

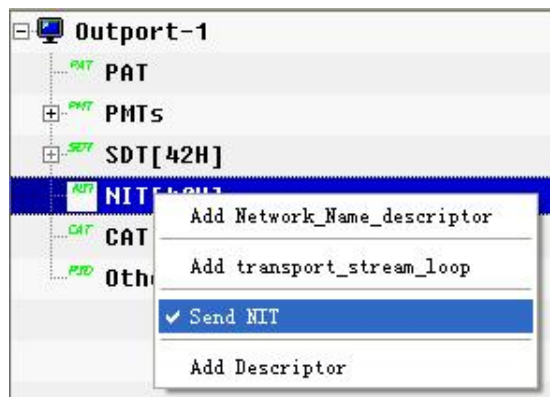


figure 3-34

9、 click” 🌟” to save these parameters.

## Edit NIT

M208 can edit and send NIT information

1、select output,such as3-35。

**[note]from 2-4 steps add network name describe,zhe describe may not do it.**

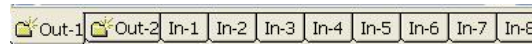


figure3-35

2、right click'NIT', select 'add Network\_Name\_descriptor' .such as3-36

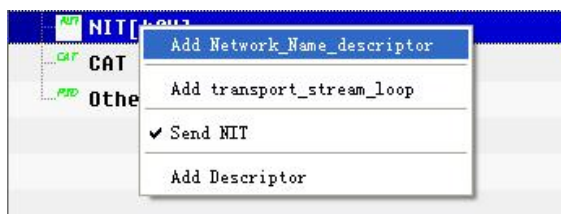


figure3-36

3、select'NetworkNameDescriptor', such as3-37.

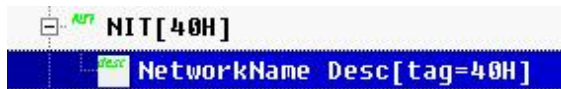


figure3-37

4、fill in network name in'NetworkNameDescriptor',such as3-38.



figure 3-38

5、right key then select 'add transport\_stream\_loop' ,such as 3-39

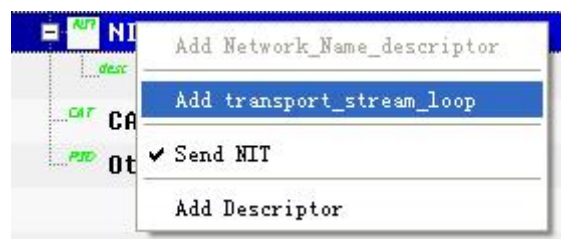


figure3-39

- 6、such as figure3-40, right click new stream then select 'trans\_stream\_id=...'   
*CableDeliverySystemDescriptor*   
*SatelliteDeliverySystemDescriptor*   
*ServiceListDescriptor*

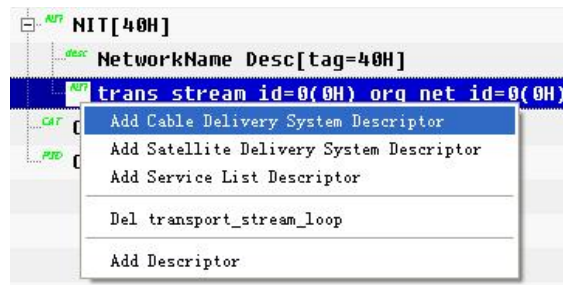


figure3-40

- 7、select “cable delivery ststem descriptor”,such as3-41.

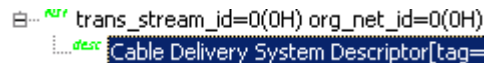


figure3-41

- 8、fill in parameters in 'cable delivery system descriptor',such as3-43.

Cable Delivery System Descriptor	
frequency(MHz)	0.000000
FEC_outer	not defined
modulation	not defined
symbol_rate(MHz)	0.000000
FEC_inner	not defined

figure3-43

**Note:these parameters are responding to Modulator which connect with the M208**

**Suggestion to FEC\_inner: commonly select “not defined”**

**Suggestion to FEC\_outer: commonly select “RS(204/188)”**

- 9、repeat to operate from figure3-37 to figure3-43, such as3-44

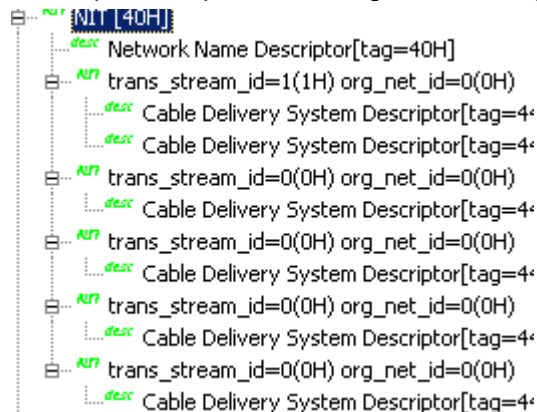


figure3-44

- 10、click “★” to save these parameters

## Add private description

M208 support to add private description in PSI and SI, it can send another stream.

- 1、at first click output ,select out-1。 For example figure3-45。

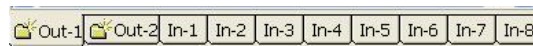


figure 3-45

- 2、select one PMT on output and add some descriptors, right key click one PMT stream, the interface is shown as figure3-46, select 'Add Descriptor'

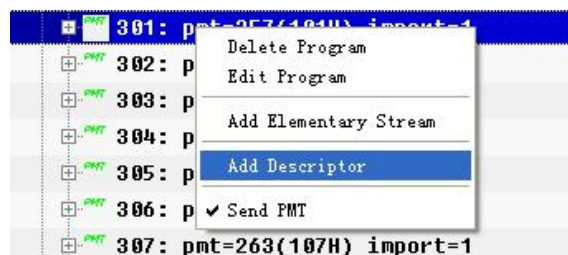


figure 3-46

- 3、click“Add Descriptor”, the interface is shown as figure3-47, input Tag、Data Len in the figure.

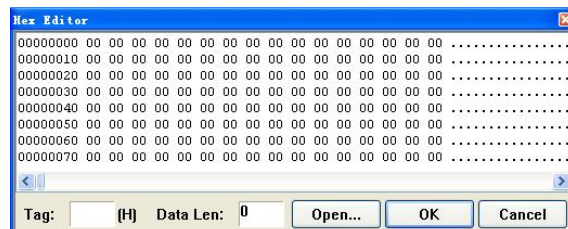


figure 3-47

- 4、click”★” to save these parameters

## Stream assembled

The M208 support to regroup bitrate streams and edit a new program transport stream, or add some element stream to program transport stream.

- 1、select output ,for example figure3-48

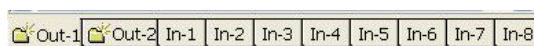


figure 3-48

- 2、right key click stream which need to add elementary stream,for example figure3-49, click 'Add Elementary Stream' in the menu  
***note:new elementary stream is from ASI import or Ethernet.***

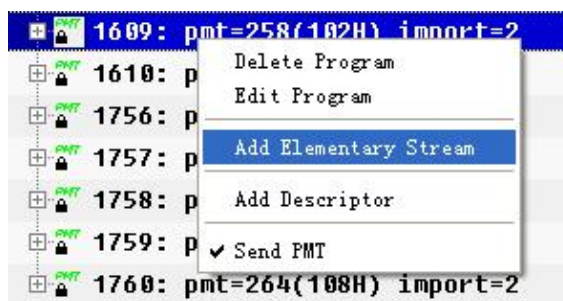


figure 3-49

- 3、pop the edit elementary stream figure,for example figure3-50,input importNo,Org Stream Pid,Org Stream Type in it,then click 'ok'.



figure 3-50

- 4、click "★" to save these parameters



# Appendix A. M208 panel operation introduce

## A-1front panel describe

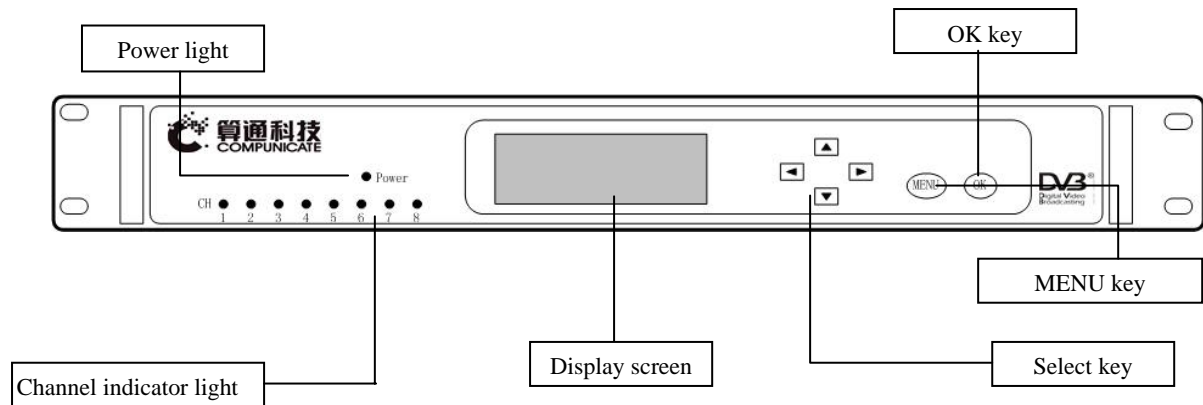


Figure A-1

- power: power supply work indicator light, when green light on that the system is normal.
- channel indicator light: display 8 channel status.these status describe is shown as appendixA-10.
- Display screen: display the system state and menu setting.
- select key: ▲▼◀▶ , ▲▼ key is used to switch up/down menu and add/decrease number, ◀▶ key is used to change numbers.
- MENU key: enter or exit operation
- OK key: make sure the operation

## A-2menu structure

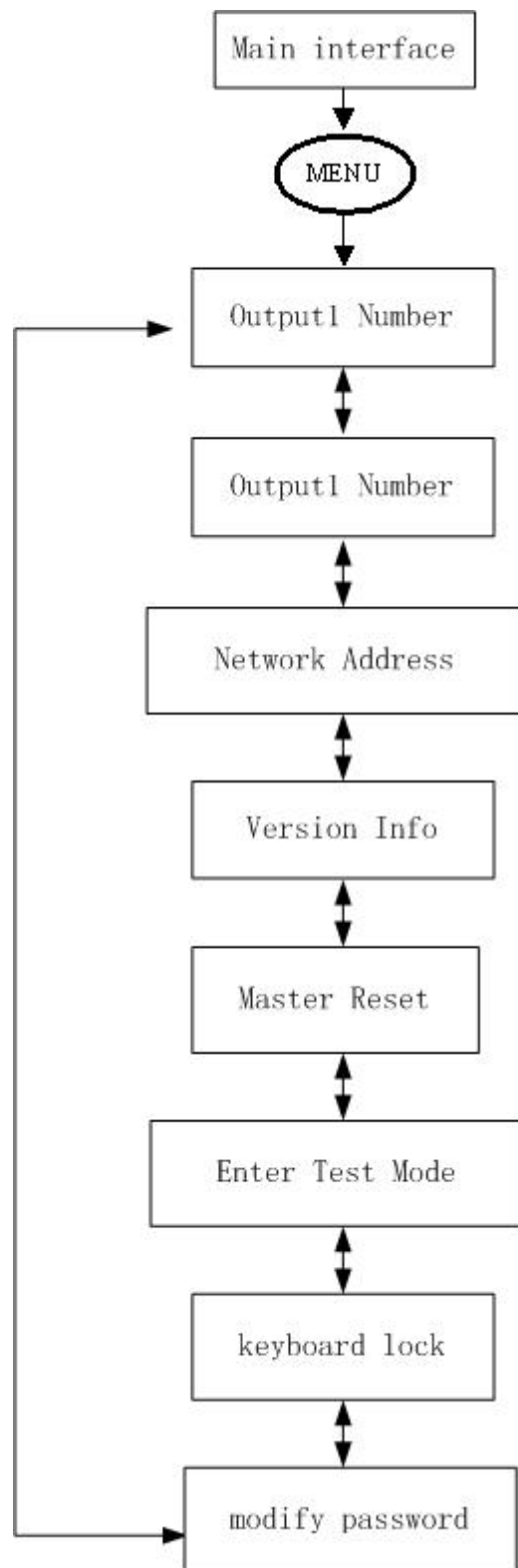


figure A-2

↑↓ :move the menu to go ahead and fall back

**Main interface:** display the multiplexer running state, turn on the power,after initializating,the system enter the interface.or if not press the key during thirty seconds,the system interface automatically switch the main interface.

## Main interface

01#	p03	bitrat000.0
02#	p04	bitrat000.0

01#, 02#:output number,setting output number is shown as appendixA-5.

p03, p04:output program number

Bitrat000.0:output real time output effective bitrate

For example: 01# p03 bitrat015.0, it mean output 1 have three programs and output bitrate is 15Mbps

output1 number: modify output1 number

output2 number: modify output2 number

Network address: setting network IP address , setting steps is shown as appendixA—4

Version info: display equipment version information

Master reset: return to original parameters,setting step is shown as appendixA—8.

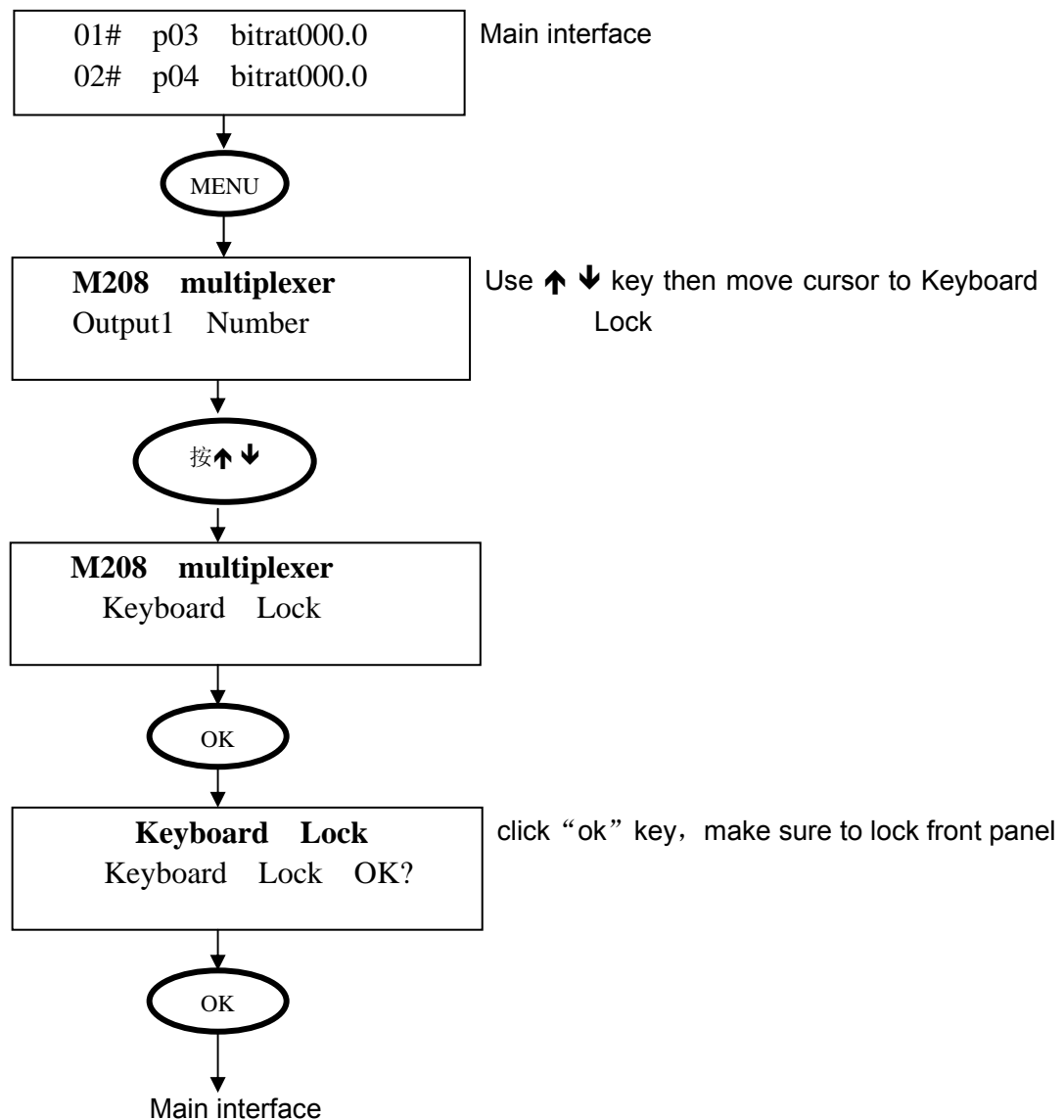
Test mode: it is a kind of work mode,setting steps is shown as appendixA—6

Keyboard lock: setting the keyboard lock,setting steps is shown as appendix A—3.

Modify password: setting unlock password,Setting steps is shown as appendixA—7

## A-3keyboard Lock

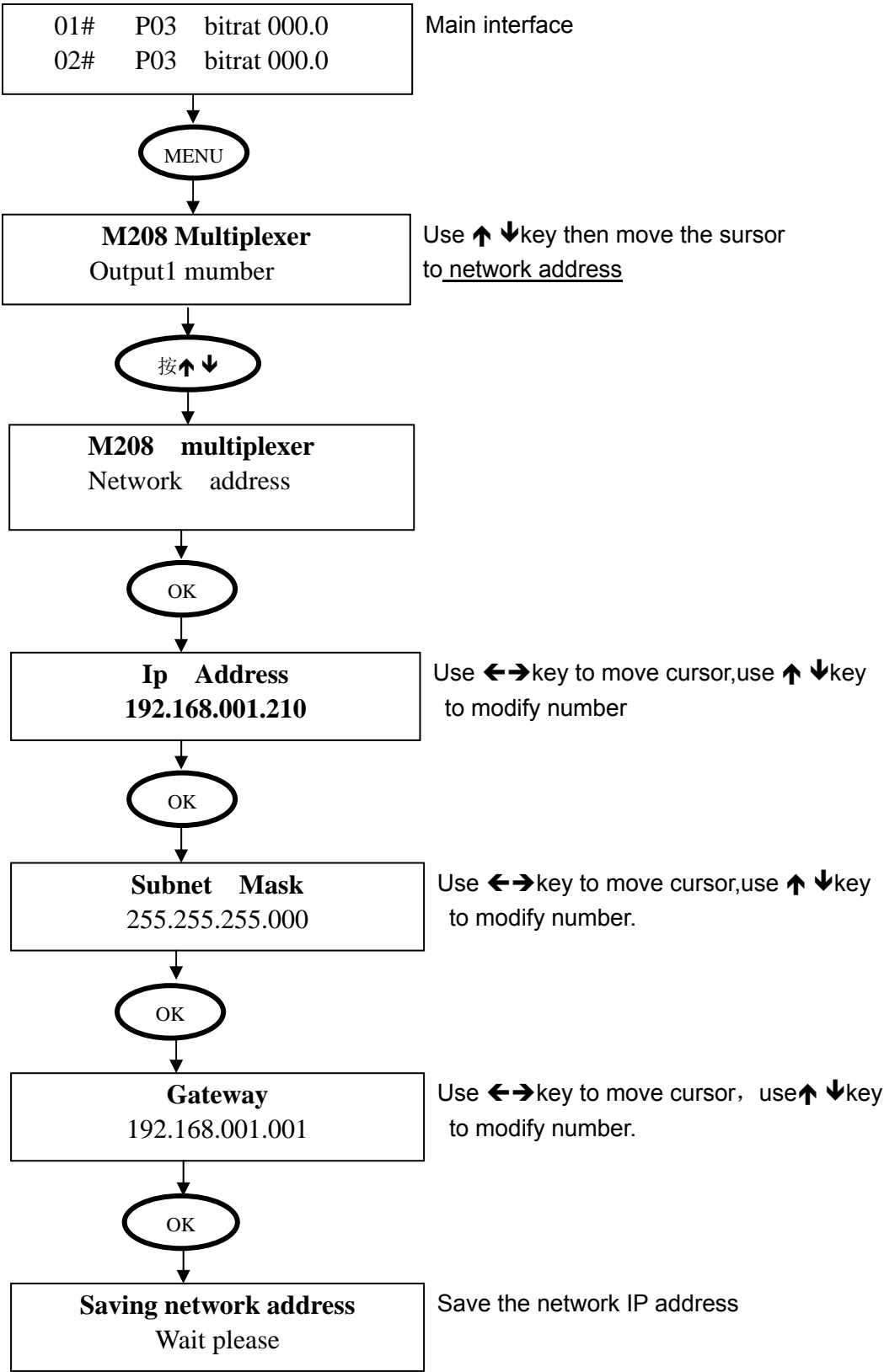
Make sure operate safely by Keyboard lock



When the front panel is locked, if need operate by front panel, it will enter to unlock status at first. Unlock original password is ↑↑↑↓↓↓↓↓, if need to modify the unlock password, please look up appendixA—7.

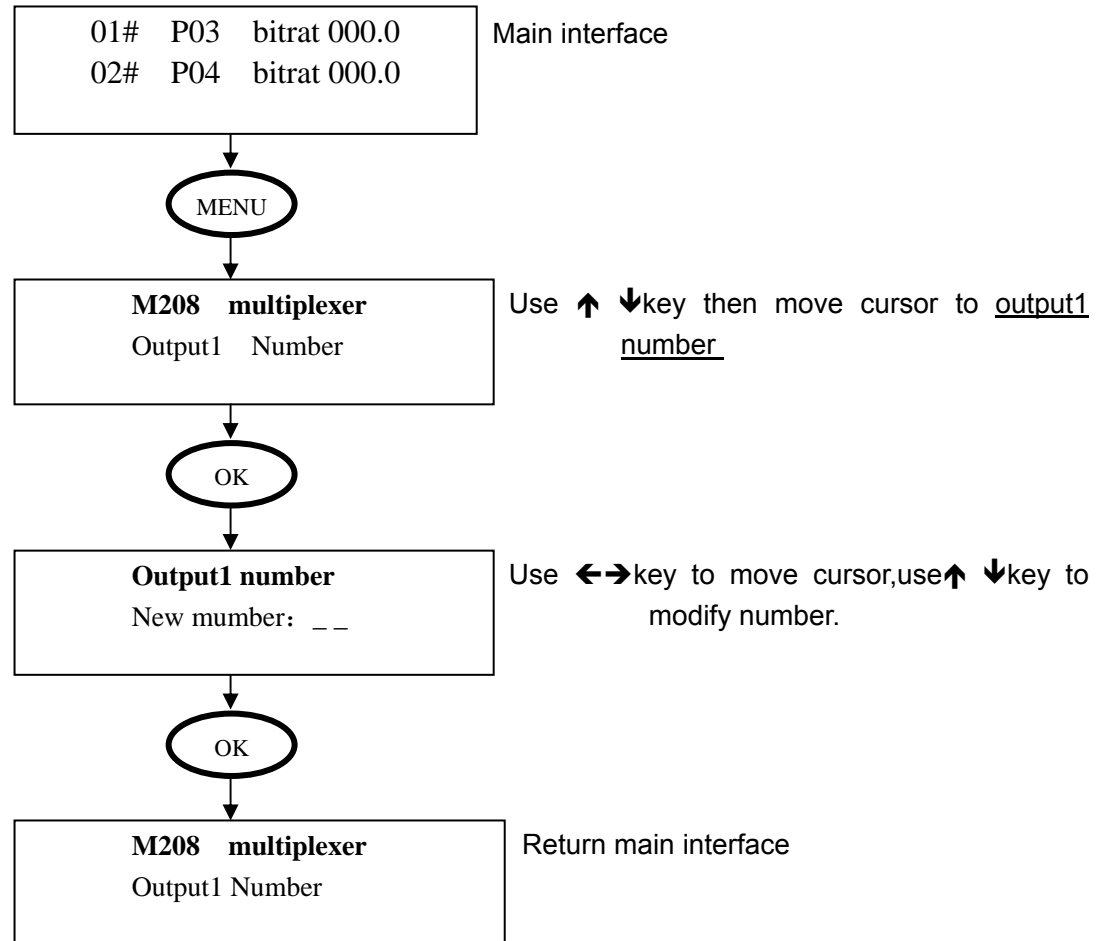
# A-4Network Address

Setting network address is that modify multiplexer IP address,its IP address/subnet mask/gateway is same as local area network.



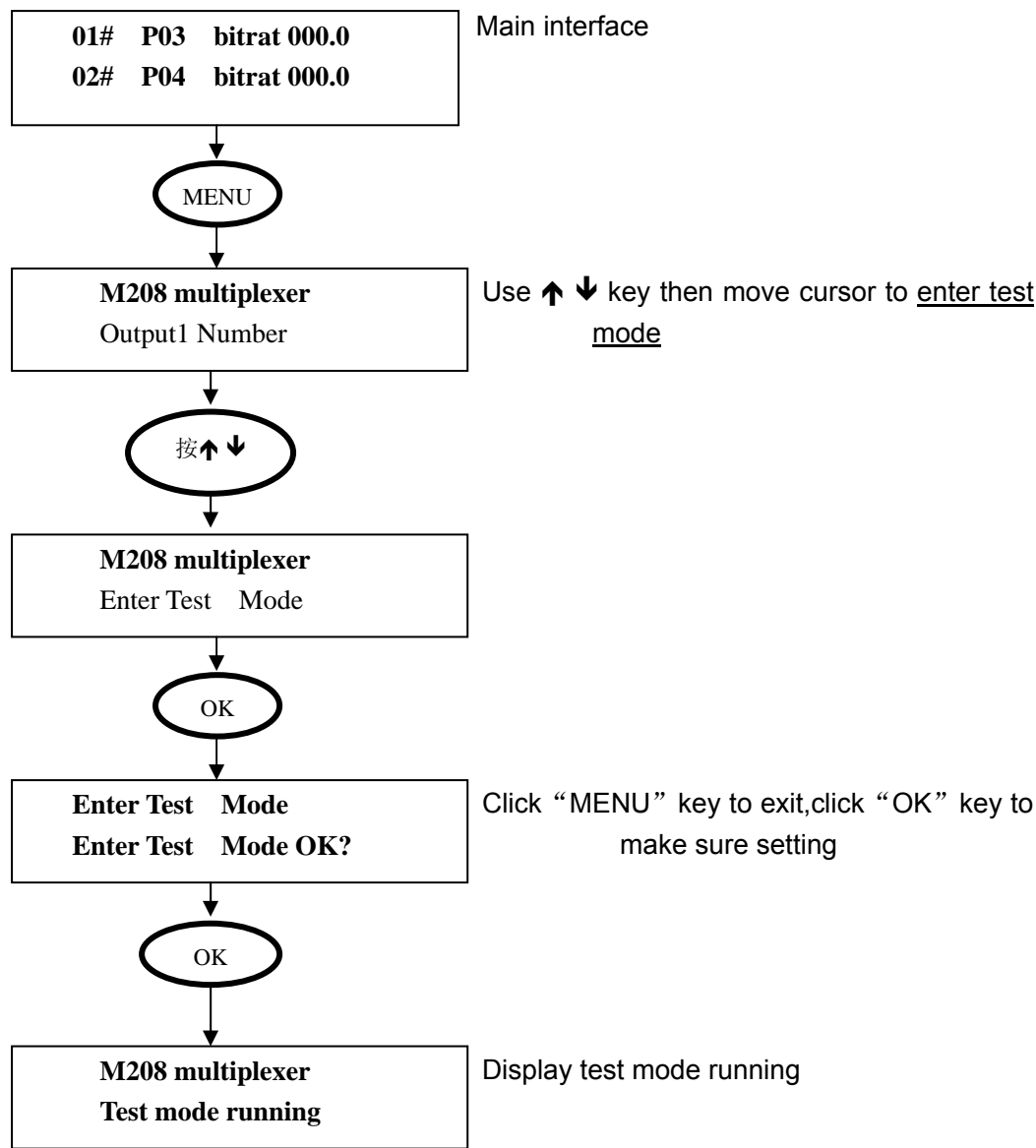
## A-5output number

setting Output number is modify multiplexer output number,for example setting output1 number



# A-6Test mode

**Note:** when setting test mode,input port will select a program to send output and output,until turn on the equipment again to return original work mode.

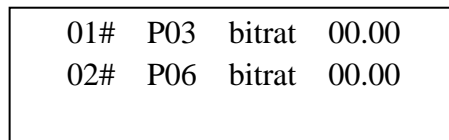


When equipment setting test mode,front panel key can not be worked,until turn on again the equipment parameters return original status.

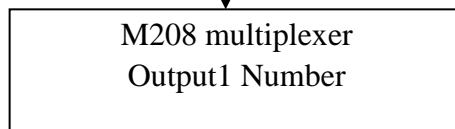
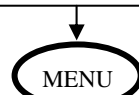
## A-7modify password



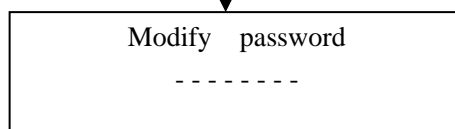
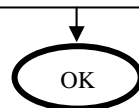
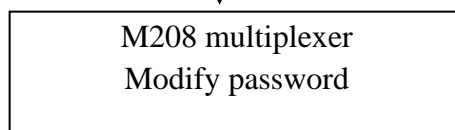
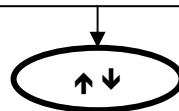
- *Front-pane password is modified by manager then please rememeber the password.*
- *once forget password,please chat with equipment provider soon.*



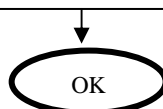
Main interface



Use ↑ ↓key then move cursor to modify  
password



Modify password: use◀▶▲▼key to modify password。Input password is the same with check password

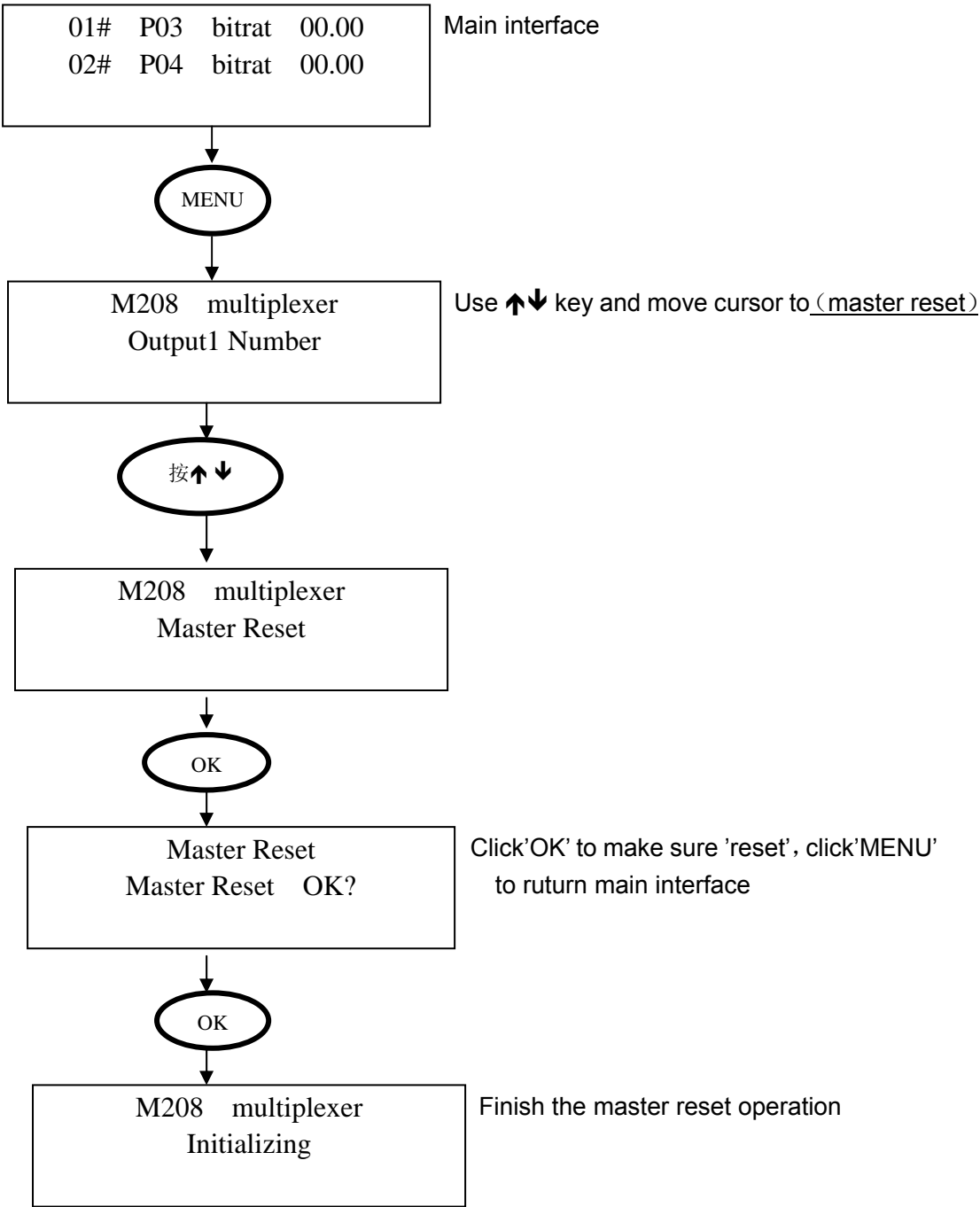


Main interface



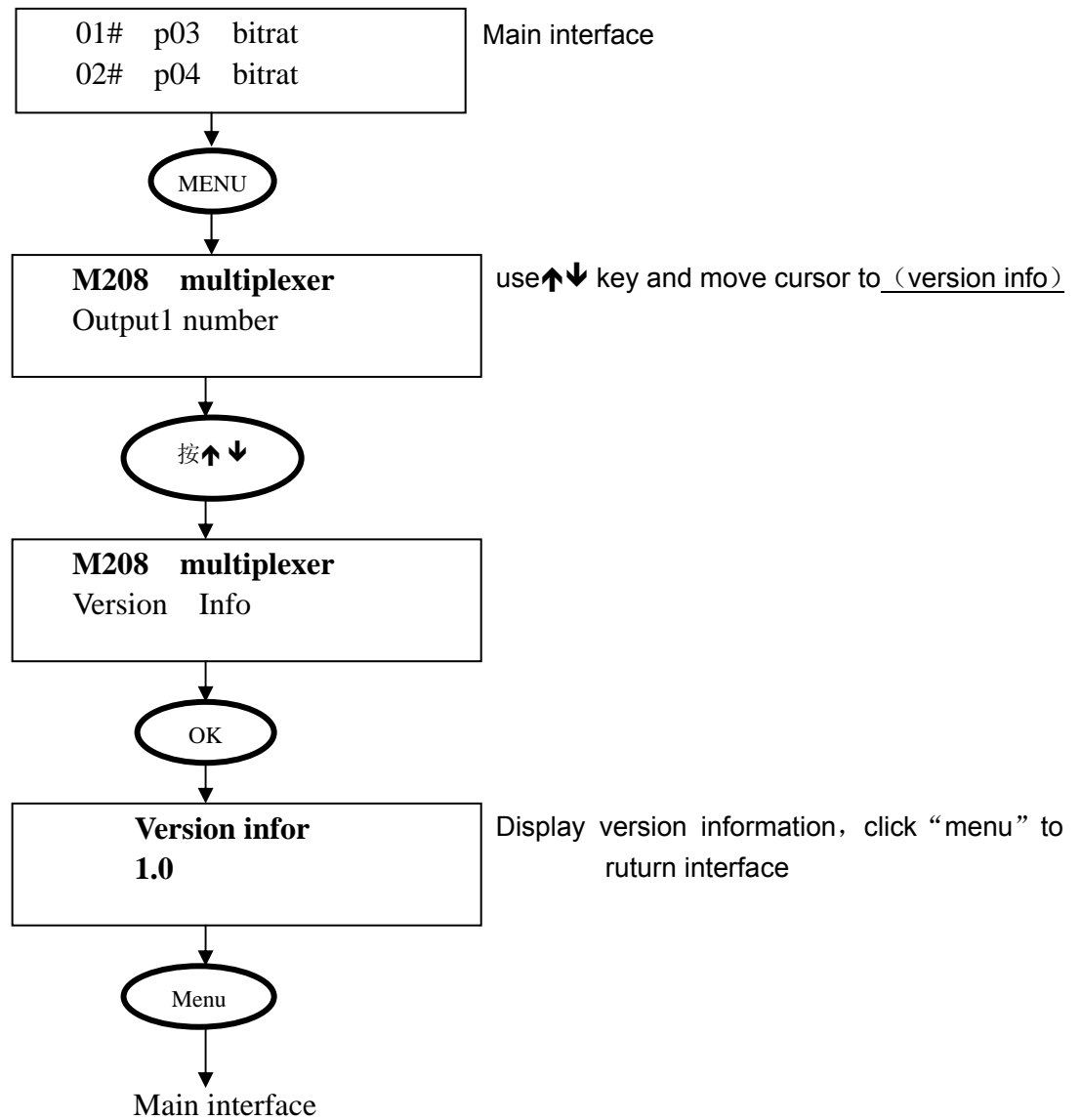
# A-8Master Reset

Once operate the item,it will clean out parameter which you make over,  
please carefully use the operation.



## A-9Version Info

Version info display the M208 version status information



## A-10 Alarm information

indicator light states	Input channels states
Green light shine	Input information locked, channels port opened
Green light twinkle	Input information but channels port unopened
Red light shine	Input bitrate overflow or input port opened but no signal input
Light dark	No input signal or open input port

# **Appendix B install M208 network process**

The M208 network software is saved in CD which send you with equipment,open the CD,copy the software to computer desk,double the software icon then configure the M208 parameters.

# Appendix C Noun Abbreviations

<b>A</b>	<b>ASI:</b>	asynchronism serial interface
<b>B</b>	<b>BAT:</b>	Bouquet Association Table
<b>C</b>	<b>CAT:</b>	Condition Access Table
<b>M</b>	<b>MPTS:</b>	Multiple Programs Transport Stream
<b>N</b>	<b>NIT:</b>	Net work Information Table
<b>P</b>	<b>PAT:</b>	Program Association Table
	<b>PCR:</b>	Program Clock Reference
	<b>PID:</b>	Packet Identifier
	<b>PMT:</b>	Program Map Table
	<b>PSI:</b>	Program Specific Information
<b>S</b>	<b>SDT:</b>	Service Description Table
	<b>SI:</b>	Service Information
	<b>SPTS:</b>	Single Program Transport Stream
<b>T</b>	<b>TDT:</b>	Time and Date Table
	<b>TS:</b>	Transport_stream